

AMENDMENTS TO THE CLAIMS

- 44. (Withdrawn) A polyester composition comprising:
 - (a) a polyester;
 - (b) at least one additive that is capable of reacting with acetaldehyde to form a new carbon-carbon bond, said additive being selected from the group consisting of acyclic active methylene compounds represented by the following formulae:

$$X_{1} \xrightarrow{Y_{1}} X_{1} \xrightarrow{Q} X_{2} \xrightarrow{Q} X_{1}$$

$$X_{1} \xrightarrow{Q} Q \xrightarrow{Q} X_{1}$$

wherein X_1 and Y_1 each denote an electron withdrawing group and are independently selected from aryl, carbamoyl, cyano, heteroaryl, nitro, sulfamoyl, R_1 -CO-, R_1 O-CO-, R_1 NHCO-, $(R_1)_2$ N-CO-, HO-L₂-NHCO-, $(HO-L_2)_2$ N-CO-, R_1 -O₂S-, R_1 -NHO₂S-, and $(R_1)_2$ NO₂S-, wherein R_1 is selected from C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, substituted C_3 - C_8 -cycloalkyl, C_3 - C_8 -alkenyl, C_3 - C_8 -alkynyl, aryl, heteroaryl; wherein L_2 is a divalent linking group selected from C_1 - C_{22} -alkylene, C_3 - C_8 -cycloalkylene, C_1 - C_6 -alkylene-cyclohexylene- C_1 - C_6 -alkylene, C_2 - C_4 -alkylene-O-arylene-O- C_2 - C_4 -alkylene, arylene and - $(CH_2CH_2$ - $L_3)_{1-3}$ - CH_2CH_2 -, wherein L_3 is selected from -O-, -S-, -SO₂-, and -N(R_1)-;

wherein Y_2 is selected from -O-, -NH- and -N(R_1)-;

wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl;

wherein R2 is selected from aryl and heteroaryl; and

- (c) one compound known to catalyze the reaction between an acidic methylene and an aldehyde selected from the group consisting of hindered amine light stabilizers (HALS), amino acids, alkali metal salts of mono- and poly-carboxylic acids, tertiary amines, secondary amines and substituted piperidines and their acid addition salts, when both X_1 and Y_1 are selected from the group consisting of R_1 -CO-, or R_1 O-CO- and R_1 is selected from the group consisting of C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, substituted C_3 - C_8 -cycloalkyl, aryl, heteroaryl; or when Y_2 is -O- and X_1 is R_1 -CO-.
- 45. (Withdrawn) The polyester composition of claim 44 wherein the additive is a compound having the general formula:

$$X_1 \underbrace{\hspace{1cm}}^{Y_1}$$

wherein X_1 and Y_1 each denote an electron withdrawing group and are independently selected from aryl, cyano, heteroaryl, nitro, sulfamoyl, R_1 -CO-, R_1 O-CO-, R_1 NHCO-, $(R_1)_2$ N-CO-, HO-L₂-NHCO-, $(HO-L_2)_2$ N-CO-, R_1 -O₂S-, R_1 -NHO₂S-, and $(R_1)_2$ NO₂S-, wherein R_1 is selected from C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, substituted C_3 - C_8 -cycloalkyl, C_3 - C_8 -alkenyl, C_3 - C_8 -alkynyl, aryl, heteroaryl; wherein L_2 is a divalent linking group selected from C_1 - C_{22} -alkylene, C_3 - C_8 -cycloalkylene, C_1 - C_6 -alkylene-cyclohexylene- C_1 - C_6 -alkylene, C_2 - C_4 -alkylene-O-arylene-O- C_2 - C_4 -alkylene, arylene and - $(CH_2CH_2-L_3)_{1-3}$ - CH_2CH_2 -, wherein L_3 is selected from -O-, -S-, -SO₂-, and -N(R_1)-;

wherein Y_2 is selected from -O-, -NH- and -N(R_1)-; wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl; and wherein R_2 is selected from aryl and heteroaryl.

46. (Withdrawn) The polyester composition of claim 45 wherein X_1 is R_1 -CO-, and Y_1 is R_1 NHCO-, wherein R_1 is independently selected from the group consisting of C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, and heteroaryl.

47. (Withdrawn) The polyester composition of claim 44 wherein the additive is a compound having the general formula:

$$X_1$$
 Y_2 L_2 Y_2 Y_1

48. (Withdrawn) The polyester composition of claim 44 wherein the additive is a compound having the general formula:

49. (Withdrawn) The polyester composition of claim 44 wherein the additive is a compound having the general formula:

$$R_2$$
 X_2
 Y_3

- 50. (Withdrawn) The polyester composition of claim 44 wherein Y₂ is -O-.
- 51. (Withdrawn) The polyester composition of claim 44 wherein Y₂ is -NH-.
- 52. (Withdrawn) The polyester composition of claim 44 wherein Y_2 is -N(R_1)-.
- 53. (Currently Amended) A polyester composition consisting essentially of comprising:
 - (a) a polyester; and
 - (b) at least one additive that is capable of reacting with acetaldehyde to form a new carbon-carbon bond, said additive selected from the group consisting of cyclic active methylene compounds represented by the following formulae:

wherein R_3 is selected from C_1 - C_6 -alkoxycarbonyl, cyano, heteroaryl; wherein R_4 is selected from aryl and heteroaryl;

wherein R₅ is selected from hydrogen, C₁-C₆-alkyl, substituted C₁-C₆-alkyl, C₃-C₈-cycloalkyl and aryl;

wherein R_6 is selected from hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy, halogen, cyano, C_1 - C_6 -alkoxycarbonyl, trifluoromethyl, hydroxy, C_1 - C_6 -alkanoyloxy, aroyl, C_1 - C_6 -alkylthio, C_1 - C_6 -alkylsulfonyl, carbamoyl, sulfamoyl, -NHCOR₉, -NHSO₂R₉, -CONHR₉, -CON(R₉)₂, -SO₂NHR₉ and -SO₂N(R₉)₂, wherein R₉ is selected from C_1 - C_6 -alkyl, substituted C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl and aryl;

wherein R₇ is selected from hydrogen, C₁-C₆-alkyl, and aryl;

wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl;

wherein R_8 is selected from hydrogen, C_1 - C_6 -alkyl, substituted C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl, C_3 - C_8 -alkenyl, C_3 - C_8 -alkynyl and aryl; and

wherein L_4 is selected from -O-, -S- and -N(R_{10})-, wherein R_{10} is selected from hydrogen, C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl and aryl.

54. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

55. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

$$\begin{array}{c}
O \\
N-R_5 \\
N
\end{array}$$

56. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

57. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

58. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

59. (Previously presented) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

60. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

61. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

62. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

$$Y_3$$
 X_2
 R_6
 Y_3
 X_2

63. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

64. (Withdrawn) The polyester composition of claim 53 wherein the additive is a compound having the general formula:

- 65. (Previously presented) The polyester composition of claims 44 or 53 further comprising 1-99 weight percent of a post-consumer recycled material.
- 66. (Previously presented) The polyester composition of claim 44 or 53 further comprising 0.01 to 10 weight percent of at least one colorant and/or ultraviolet light absorbing compound in the polyester.

- 67. (Previously presented) The polyester composition of claim 44 or 53 further comprising an infrared absorbing compound selected from carbon black, black iron oxide, reduced antimony metal catalyst residues, metal phthalocyanines, metal naphthalocyanines, and squaraines.
- 68. (Previously presented) The polyester composition of claim 53 further comprising one compound known to catalyze the reaction between an acidic methylene and an aldehyde selected from the group consisting of hindered amine light stabilizers (HALS), amino acids, alkali metal salts of mono- and poly-carboxylic acids, tertiary amines, secondary amines.
- 69. (Previously presented) The polyester composition of claim 44 or 53 further comprising a non-sticking additive selected from lubricants, inorganic mineral composites, and talc.
- 70. (Withdrawn) The polyester composition of claim 44 wherein the additive is a compound having the formula:

71. (Previously presented) The polyester composition of claim 53 wherein the additive is selected from the group consisting of compounds having the formula:

- 72. (Withdrawn) A shaped or formed article comprised of the composition of claim 44.
- 73. (Withdrawn) A shaped or formed article comprised of the composition of claim 53.
- 74. (Withdrawn) A method for reducing the amount of acetaldehyde in a polyester composition, which comprises melt-blending into the polyester composition at least one additive that is capable of reacting with acetaldehyde to form a new carbon-carbon bond, said additive selected from the group consisting of cyclic active methylene compounds represented by the following formulae:

$$X_{1} \xrightarrow{Y_{1}} X_{1} \xrightarrow{Q} X_{2} \xrightarrow{Q} X_{1}$$

$$X_{1} \xrightarrow{Q} Q \xrightarrow{Q} X_{1}$$

wherein X_1 and Y_1 each denote an electron withdrawing group and are independently selected from aryl, carbamoyl, cyano, heteroaryl, nitro, sulfamoyl, R_1 -CO-, R_1 O-CO-, R_1 NHCO-, $(R_1)_2$ N-CO-, HO-L₂-NHCO-, $(HO-L_2)_2$ N-CO-, R_1 -O₂S-, R_1 -NHO₂S-, and $(R_1)_2$ NO₂S-, wherein R_1 is selected from C_1 -C₂₂-alkyl, substituted C_1 -C₂₂-alkyl, C_3 -C₈-cycloalkyl, substituted C_3 -C₈-cycloalkyl, C_3 -C₈-alkenyl, C_3 -C₈-alkynyl, aryl, heteroaryl; wherein L_2 is a divalent linking group selected from C_1 -C₂₂-alkylene, C_3 -C₈-cycloalkylene,

 C_1 - C_6 -alkylene-Cyclohexylene- C_1 - C_6 -alkylene, C_2 - C_4 -alkylene-O-arylene-O- C_2 - C_4 -alkylene, arylene and -(CH₂CH₂-L₃)₁₋₃-CH₂CH₂-, wherein L₃ is selected from -O-, -S-, -SO₂-, and -N(R₁)-;

wherein Y_2 is selected from -O-, -NH- and -N(R_1)-;

wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl;

wherein R₂ is selected from aryl and heteroaryl; and

- (c) one compound known to catalyze the reaction between an acidic methylene and an aldehyde selected from the group consisting of hindered amine light stabilizers (HALS), amino acids, alkali metal salts of mono- and poly-carboxylic acids, tertiary amines, secondary amines and substituted piperidines and their acid addition salts, when both X_1 and Y_1 are selected from the group consisting of R_1 -CO-, or R_1 O-CO- and R_1 is selected from the group consisting of C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, substituted C_3 - C_8 -cycloalkyl, aryl, heteroaryl; or when Y_2 is -O- and X_1 is R_1 -CO-.
- 75. (Withdrawn) The method of claim 74 wherein the additive is a compound having the general formula:

$$X_1 \longrightarrow Y_1$$

wherein X_1 and Y_1 each denote an electron withdrawing group and are independently selected from aryl, cyano, heteroaryl, nitro, sulfamoyl, R_1 -CO-, R_1 O-CO-, R_1 NHCO-, $(R_1)_2$ N-CO-, HO-L₂-NHCO-, $(HO-L_2)_2$ N-CO-, R_1 -O₂S-, R_1 -NHO₂S-, and $(R_1)_2$ NO₂S-, wherein R_1 is selected from C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, C_3 - C_8 -cycloalkyl, substituted C_3 - C_8 -cycloalkyl, C_3 - C_8 -alkenyl, C_3 - C_8 -alkynyl, aryl, heteroaryl; wherein L_2 is a divalent linking group selected from C_1 - C_2 -alkylene, C_3 - C_8 -cycloalkylene, C_1 - C_6 -alkylene-cyclohexylene- C_1 - C_6 -alkylene, C_2 - C_4 -alkylene-O-arylene-O- C_2 - C_4 -alkylene, arylene and - $(CH_2CH_2$ - $L_3)_{1-3}$ - CH_2CH_2 -, wherein L_3 is selected from -O-, -S-, -SO₂-, and -N(R_1)-;

wherein Y_2 is selected from -O-, -NH- and -N(R_1)-; wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl; and wherein R₂ is selected from aryl and heteroaryl.

76. (Withdrawn) The method of claim 75 wherein X_1 is R_1 -CO-, and Y_1 is R_1 NHCO-, wherein R_1 is independently selected from the group consisting of C_1 - C_{22} -alkyl, substituted C_1 - C_{22} -alkyl, aryl, and heteroaryl.

77. (Withdrawn) A method for reducing the amount of acetaldehyde in a polyester composition, which comprises melt-blending into the polyester composition at least one additive that is capable of reacting with acetaldehyde to form a new carbon-carbon bond, said additive selected from the group consisting of cyclic active methylene compounds represented by the following formulae:

wherein R_3 is selected from C_1 - C_6 -alkoxycarbonyl, cyano, heteroaryl; wherein R_4 is selected from aryl and heteroaryl;

wherein R_5 is selected from hydrogen, C_1 - C_6 -alkyl, substituted C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl and aryl;

wherein R_6 is selected from hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy, halogen, cyano, C_1 - C_6 -alkoxycarbonyl, trifluoromethyl, hydroxy, C_1 - C_6 -alkanoyloxy, aroyl, C_1 - C_6 -alkylthio, C_1 - C_6 -alkylsulfonyl, carbamoyl, sulfamoyl, -NHCOR₉, -NHSO₂R₉, -CONHR₉, -CON(R₉)₂, -SO₂NHR₉ and -SO₂N(R₉)₂, wherein R₉ is selected from C_1 - C_6 -alkyl, substituted C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl and aryl;

wherein R₇ is selected from hydrogen, C₁-C₆-alkyl, and aryl;

wherein X_2 and Y_3 are independently selected from cyano, C_1 - C_6 -alkylsulfonyl, arylsulfonyl and C_1 - C_6 -alkoxycarbonyl;

wherein R_8 is selected from hydrogen, C_1 - C_6 -alkyl, substituted C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl, C_3 - C_8 -alkenyl, C_3 - C_8 -alkynyl and aryl; and

wherein L_4 is selected from -O-, -S- and -N(R_{10})-, wherein R_{10} is selected from hydrogen, C_1 - C_6 -alkyl, C_3 - C_8 -cycloalkyl and aryl.